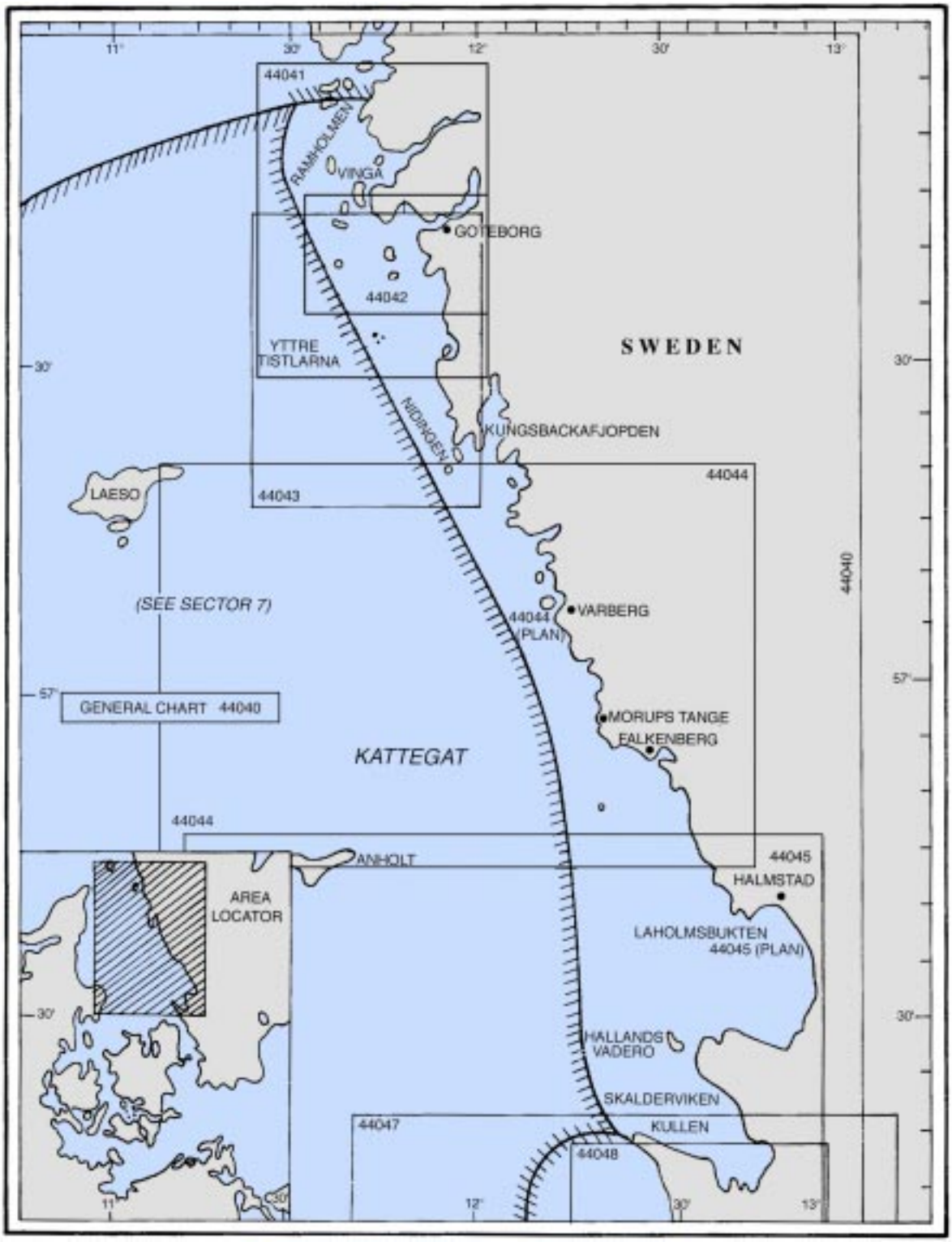
Table of Contents



Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR **6** — CHART INFORMATION

Table of Contents

SECTOR 6

SWEDEN—WEST COAST—RAMHOLMEN TO KULLEN

Plan.—This sector describes the W coast of Sweden from Ramholmen, a small island on the S side of the approach to Marstrandsfjorden, to the W extremity of Kullen, a conspicuous promontory located about 97 miles, SSE.

General Remarks

6.1 The N part of the coast contained in this sector is very irregular and is fronted by numerous islands, rocks and shoals. The coast line, indented by a number of bays and fjords includes the major ports of Goteborg and Halmstad, several ports of lesser importance and a number of fishing harbors.

Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea should be consulted for information concerning danger and mined areas in this sector.

In particular, areas dangerous for anchoring or fishing due to the possible existence of mines extend nearly the whole distance across the entrance to Kattegat from Skagen to the coast of Sweden. These areas also extend about 4 miles seaward from the outer shoals, and lie between South Kraken and Torrbeskar.

Mines.—In the area covered by this volume a risk still exists from large numbers of unswept ground mines laid during World War II (1939-1945). These mines are of the magnetic, acoustic, or pressure types. They may lie on or under the sea bed, and are no longer considered dangerous to surface shipping or passage.

Details of these areas can be found in Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea. In addition, there are numerous small minefields situated in Danish waters and defensive minefields in Swedish waters.

In the defensive minefields, mariners are cautioned not to anchor, and they should not pass through them in thunderstorms. In case of an emergency, when anchoring becomes essential, anchor as near to the outer limit of the mined area as possible.

Within the limits of this volume there are three defensive minefields in the approaches to Goteborg.

The N minefield lies across the N approaches of the main channel between **Bjorko** (57˚44'N., 11˚41'E.), Kallon, 1 mile WNW, and Halso, 0.5 mile W. The fishing harbors within this area are not included.

The center minefield lies N-S across the main channel and the SW channel to Goteborg, from the E of **Vinga Sand** (57˚39'N., 11˚43'E.) and Dana Fjord (2 miles N) into Hake Fjord, 1.5 miles farther E.

The S minefield lies across the S approaches to Goteborg, from SE of **Kopstadso** (57˚38'N., 11˚49'E.) and NE of Donso, 2.5 miles S, extending 1.75 miles ENE to Langholmen.

Routes.—Approximate distances from **Skagen** (57˚47'N., 10˚46'E.) to Longitude 13˚30'E in the SW approaches to the Baltic Sea through the following routes:

Store Baelt	310 miles.
Lille Bae1t	340 miles.
The Sound	210 miles.

The natural links from the North Sea, through Kattegat, to the Baltic Sea are Store Baelt (Great Belt), Lille Belt (Little Belt), and The Sound. However, the Nord-Ostee-Kanal (Kiel Kanel), described in Pub. 194 Sailing Directions (Enroute) Baltic Sea (Southern Part), provides the shortest link between the North Sea and the Baltic Sea.

Lillebelt is the W route between Kattegat and the Baltic Sea. The channel is narrow and winding in places and it is about 67 miles long.

Store Baelt is the middle route and is used by larger, deep draft vessels, passing between Kattegat and the Baltic Sea; the fairway is about 63 miles long.

The Sound, the E route, forms the shortest link between Kattegat and harbors in the E Baltic Sea; the fairway is about 65 miles long and is used by vessels with medium draft.

Route T is established and well marked by buoys, lighted buoys, as shown on the chart. It is the recommended route for large vessels.

This route leads from No. 1 Lighted Buoy off Skagens Rev through Store Baelt, to position 54˚46'N, 12˚44'E, approximately 25 miles W of Kap Arkona. The Danish pilot is available if required. Sections of this route are designated Deep Water Routes.

Regulations.—For information concerning pilotage in Swedish waters, Swedish Ice Procedures, Restricted Areas and Semi-restricted Areas, see Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

Denmark has established a voluntary reporting system called SHIPPOS. The object of the system is to ensure the safety of navigation and to reduce the risk of pollution on the Danish coasts and waters that might result from the grounding or collision of oil, gas, and chemical carriers. The system applies to all vessels in Danish waters in the Baltic Sea, including the transit routes. For further information on SHIPPOS, see Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

Caution.—Vessels constrained by their draft may be encountered in the waters described in this sector and along the transit routes. Such deep-draft vessels may not be able to change course in critical areas without risking the danger of running aground.

Ramholmen to Vinga

Ramholmen (57˚52'N., 11˚33'E.) lies on the SE side of the approach to Marstrandsfjorden. This small island marked by lights and range beacons lies close to Busholmen, a similar island that displays a cairn. The channel which passes between these small islands provides access to the inland passages, which lead E and NE into Hakefjorden. This route can be taken

by vessels with a draft not exceeding 5.5m, but local knowledge for passage is necessary.

Aspect.—There are few natural marks to assist the mariner making this coast or passing off the outer islands but there are some tall marks that will be found prominent.

There are two high, light colored islands, 5.5 miles and 8 miles S of Marstrand. Roron, the N island, has on its S side a framework lookout tower, 17m in height and is seen clearly from seaward. The island of Hyppeln, close S of Roron, has an elevation of 44m, and can be identified by a cairn on its summit.

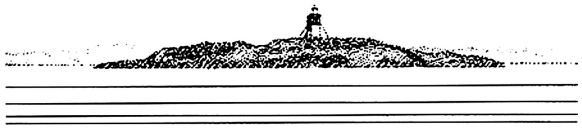
During fog and snow, a patrol rescue vessel stationed at Roron will provide assistance in determining a vessel's position by radar, if so requested by radio.

Rafven, 0.5 mile NW of Roron, is a light colored rocky islet with a large rock on its N side. On Storra Rossen, another islet 0.5 mile SE of Rafven, there is a beacon, standing near its SE end. This daymark faces SSW.

Two high dark rocks, Stora and Lilla Polsan lie 2.5 miles W of Roron. Stora Polsan Lighthouse stands on the summit of the rock.

Pilotage.—Pilotage can be secured at Marstrand.

Caution.—Dangerous, detached shoals lie within 1.75 miles W of Busholmen and Ramholmen. The outermost danger is Krakebadan, marked on its W side by a buoy. A least depth of 2.7m lies North and South of Krakan, located 0.75 mile NE and SE of Krakebaden. They are both marked by awash rocks. South Krakan is marked by a beacon. The other detached shoals of this dangerous group are unmarked.



STORA POLSAN LIGHT

6.2 Torrbeskar Island (57˚44'N., 11˚35'E.), is small, but is marked by a beacon. Located about 1.25 miles SSW of Hyppeln, the beacon of Forrbeskar is difficult to distinguish from seaward.

Stora Oset Light (57˚45'N., 11˚37'E.) is shown on the islet of the same name. On Kallo, 1 mile ESE of Hyppeln, there is a water tower **Knippla** (57˚45'N., 11˚39'E.) is on the SE side of Kallo. In 1987, the depth in the harbor was 3.4 to 5m. Several detached shoal patches lie between the two islets and up to 0.5 mile S and SW of Torrbeskar.

Buro, an island about 1 mile SE of Hyppeln, stands out as there is a conspicuous white mark on its W side.

Ockero (57˚43'N., 11˚39'E.) together with Hono close S of it, are two of the largest islands off this part of the coast. A conspicuous, gray, stone church with a high, dark spire stands on the S part of Ockero. A white church with a high, copper spire stands near the center of Hono.

A radio mast, 55m high, stands near the NE corner of the island.

Honohuvid, a small islet marked by a light, lies on an area of foul ground about 0.5 mile SW of the W extremity of Honon. A small fishing port is situated on the N side of Honon and is

OCKERO CHURCH

entered through a buoyed channel, marked by lighted range beacons. The port has a depth of about 3.5m.

Honoklava (57˚41'N., 11˚39'E.), another fishing port is located on the S side of this island. Honoklava is important in that it is one of the most ice free harbors on this part of the coast.

Depths—Limitations.—There are four channels of approach leading to the harbor. The NW channel can accommodate a maximum draft of 3m; the W channel has a least depth of about 5.2m; the SW channel can accommodate a draft of not more than 3.6m; and the channel leading from Danafjorden can accommodate a draft of not more than 3m. Local knowledge is necessary for using these channels. Pilots can be obtained from **Vinga** (57˚38'N., 11˚36'E.).

The harbor, which is entered through two breakwaters, has about 1,005m of berthing space with depths of 3.5 to 4.4m alongside.

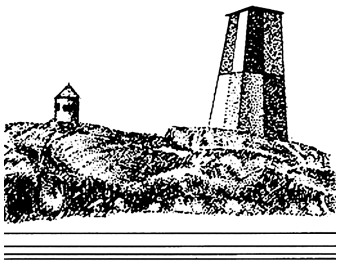
Numerous islands, islets, and rocks lie within the foul ground, which extends from Honon to the island of Vinga about 3.5 miles to the S. Fogdo, Halleskar, Inholmarna, Vinga, and Buskar are the largest islands of the group and are separated from each other by narrow passages which lead into Vingasand and Danafjorden to the E.

6.3 Northern inner channels to Goteborg.—From seaward, the principal inside channel leading from Marstrandsfjorden to Goteborg is entered through **Stora Sillesund** (57˚51'N., 11˚31'E.) and passes through Salofjord, Kallofjord, and Stora Kalvsund, and then along the E side of Honon into Danafjorden and Vingasand. This passage is marked by navigational aids and can accommodate vessels drawing up to 5.9m. None of the other passages should be attempted without local knowledge. Pilots can be obtained from Marstrand.

In the N approach, **Yttre Lekskar** (57˚50'N., 11˚35'E.) and Inre Lekskar are two small islets lying in the passage. Range lights on Ramholmen lead between these islets.

A light is shown on Inre Lekskar and a beacon stands on the islet.

Salofjord (57˚48'N., 11˚38'E.), the first in a number of fjords entered in this N passage, has moderate depths but is surrounded by numerous islets, rocks and sunken dangers. As depicted on the chart, Salofjord is entered from the N through the narrow buoyed channel which passes close W of Salo or through the W channel which lies N of Rafven. The passage entering from Algofjorden passes E of Salo into Salofjord.



INRE LEKSKAR LIGHT AND BEACON

Anchorage.—Anchorage is afforded between the NE side of ro-ro and Stora Svarten in depths of 12 to 18.3m, clay.

Directions—West approach to ro-ro anchorage.—A vessel approaching from the W should steer a course of 095˚ passing about 0.25 mile N of Rafven and the same distance N of Kullen, about 2 miles to the E. When N of and abeam the buoy marking the 5.9m patch N of Kullen alter course to the SE and then S passing E of the buoy marking the dangerous wreck about 0.25 mile E of Kullen. Course can then be set for the anchorage about midway between the N end of ro-ro and Stora Svarten.

Kallo (57˚45'N., 11˚39'E.), located on the W side of the passage, is marked on its NE side by a beacon. A pair of lighted range beacons indicate the approach to a small fishing harbor on the SE side of the island.

Bjorko (57˚44'N., 11˚41'E.), a large narrow island about 3 miles long, lies with its N part about 0.5 mile E of Kallo. A pair of lighted range beacons on the W side of Bjorkon indicate the best channel through Kallofjord to the N.

6.4 **Kallofjord** (57˚46'N., 11˚39'E.), the body of water above Kallo and Bjorkon, provides protected anchorage in moderate depths. The recommended anchorage lies about midway between Kallo and Farholm about 0.75 mile NNW in depths of about 11m, clay.

Vessels drawing not more than 5.9m can approach this anchorage from the W by passing either N or SE of Torrbeskar and Stora Oset, then N of Buro and W of Kallo.

Regulations.—Vessels must not exceed a speed of 7 knots in the channel when W of Bjorkon between the cairn on the E side of Kallo and the E extremity of Hallso. The maximum permissible speed in Lilla Kalvsund is 5 knots.

Fishing harbors, common on this part of the coast, are located on the W side of Bjorkon and the SE side of Ockero. Bjorko on the W side of the island, has depths of 2.1 to 4.8m in the harbor. A cairn stands on a rock close SE of Ockero.

Stora Kalvsund (57˚42'N., 11˚41'E.), the passage between Ockero and Kalvo, provides anchorage in depths from 12.8 to 27.4m.

Lighted beacons in range 172˚ stand on the SE side of Hono and lead through the N entrance into Stora Kalvsund. The best channel is guided by a directional light through the S entrance. The dangers which lie in the approaches to and within the fjord are well marked by buoys.

Vingaleden—This channel leads into Vingasand, passing N of the island of Vinga and then NE to the channels leading to Goteborg. Owing to the difficult streams in this channel, service of a pilot is recommended.

The approach to the passage is indicated by a sector light on Viten, about 0.25 mile NE of the E end of Vinga. The center of the channel E of Vinga is defined by lighted range beacons on the SE of Vinga. Vingaleden is suitable for vessels of draft to 10.1m, but as previously stated, local knowledge is necessary.

Vinga (57˚38'N., 11˚36'E.) is of irregular shape and 21m high. A light is shown on the island. Another light is shown on Vingaunger off the NW point of the island. A beacon, pyramidal in shape, 24.4m high and surmounted by a sphere, stands close SW of Vinga Lighthouse.

Vinga island lies on the W part of an area of foul ground about 2 miles long in an E and W direction which comprises numerous rocks, islets, and sunken dangers within the limits.

Two detached 9.1 and 11m patches lie within 1 mile W of the W extremity of the island. Utligarn, the outermost danger is marked by a buoy on its W side.

Goteborg (Gothenburg) and Approaches

6.5 The principal approach used by deep draft vessels is made from Trubaduren, 18 miles S of Marstrand. Directions for this channel are given following the text on prohibited anchorages and restricted areas for Goteberg.

Trubaduren Light (57˚36'N., 11˚38'E.) is shown from a prominent tower, 25m high and surmounted by a helicopter platform, standing on an islet. A racon is situated at the light.

Gamla Gumma, a 9.lm patch marked by a buoy lies on the W side of the fairway about 0.75 mile N of Trubaduren Islet.

Sankberget, a shoal with a least depth of 11m and marked by a lighted buoy, lies about 1.5 miles ENE of Trubaduren.

As stated earlier the Goteborg S approach for vessels of deep draft leads E of **Yttre Tistlarma** (57˚31'N., 11˚44'E.) and then NE and N passing E of the islands of Valo, Vrango, Donso, Kopstadso, Aspero, and Rivo.

It should be noted that the S approach is very narrow in places but this channel and all of the other channels are well marked by navigational aids.

The two main inner channels leading to Goteborg, consist of the S channel leading E from Vingasand and passing N of Botto into Hakefjorden.

The N channel leads from Danafjorden into Hakefjorden and combines with the S channel in Rivofjord.

Aspect.—South Passage—Botto (57˚39'N., 11˚43'E.) is a small rock marked by a light on a floodlit tower. A disused lighthouse painted in red and white bands stands on a house close SE of Botto Lighthouse. A racon transmits from Trinda Brunskar, a small islet 0.7 mile S of Botto Light.

A 4.6m patch lies about 0.25 mile NNW and a 5.5m patch lies about the same distance N of Botto. The channel from Botto to Gaveskar has been swept to 12m (1983).

6.6 Vasskarsgrund Light is shown from a tower, 12m high, situated 0.2 mile NNE of Botto Light structure. A racon transmits from the tower, which is floodlit.

Photo courtesy of Donald and Diana Carter
VINGA LIGHTHOUSE

Photo courtesy of Donald and Diana Carter
VITTEN LIGHTHOUSE

Vasskaren Light, a tower 15m in height, is situated on the E side of Vinga Sand, 0.4 mile NNW of Botto Light.

Brandnasbrotten Light (57˚39'N., 11˚44'E.) stands on the outer edge of the shore bank about 0.5 mile ENE of Botto. A lighted buoy is moored on the 10m depth contour close N of the light and a 4.6m patch marked by a lighted buoy lies on the N side of the fairway N of the same light.

Gaveskar Light (57˚40'N., 11˚46'E.) stands on a rock of the same name on the N side of the fairway about 1.25 miles ENE of Brandnasbrotten. A 7m patch, marked by a lighted buoy with a radar reflector, lies on the S side of the fairway about 0.5 mile SW of Gaveskar Light.

From a position to the S of Gaveskar, the S fairway turns to the NE and forms the N main channel in the vicinity of Knippelholmen. Kuskarsbadan, a shoal with a least depth of 8.2m, lies on the S side of the fairway about 0.5 mile ENE of Gaveskar. A lighted buoy marks this danger.

Torshamnen Oil Harbor (57˚41'N., 11˚47'E.) is located on the W side of Hjartholmen island, about 2 mile N of Dynan.

Photo courtesy of Donald and Diana Carter

BOTTO LIGHTHOUSE

Photo courtesy of Donald and Diana Carter

GAVESKAR LIGHTHOUSE

The approach is through a dredged channel with a depth of 20.7m. The Torshamnen Jetty handles crude oil and has a depth of 19.6m, alongside. Tankers of up to 250,000 dwt can be accommodated at this facility.

There is also an oil harbor on the E side of Hjartholmen which is approached through a dredged channel with a depth of 9.4m.

Arendal Shipyard is situated 0.6 mile N of Knippelholmen. It is approached on course 324˚ through a channel dredged to 8.1m marked by buoys.

There are depths of 8.1m in the channel and of 9m alongside the fitting-out quay.

Goteborg (57˚42'N., 11˚57'E.)

World Port Index No. 24020

6.7 Goteborg, the second largest city in Sweden is a leading port for Scandinavian exports and imports. This transport center is centrally located in the middle of the Swedish W coast, at the mouth of the Gotaalv and lines both banks of the river up to 6.5 miles to the E. The port comprises 4 different harbors: Free Port, Lundby, Skandia, and Alusborg. There are no restrictions at any time of day or night for berthing and unberthing; however ULCC's berth and unberth in daylight only.

The port is connected with the interior of Sweden by a system of canals, rivers, and lakes, some of which provide access to the Baltic Sea.

Within a radius of 180 miles of Goteborg, half of Sweden's population is to be found and also Denmark's and Norway's most populous and industrialized regions. It is reported, over 50 shipping lines connect Goteborg on a regular basis with all major ports in all parts of the world.

Extensive modern quayage, warehouses, and cargo handling facilities are provided for all classes of vessel, capable of entering the harbor.

The old town, located opposite Frihamnen, is separated from the new town by a moat which is crossed by several bridges. In Masthugg, the W suburb of Goteborg, there are numerous factories.

Goteborg is a port of entry. The main customhouse and harbor office are located in the old town on the E bank of the river.

Ice

The harbor of Goteborg and the approaches to it are kept open throughout the winter months by powerful icebreakers. Ice reports can be obtained from the pilot office.

Tides—Currents

The water level at Goteborg and in its approaches ranges from about 1.2m above mean water level to about 0.5m below it. Infrequently, the water level falls as much as 0.8m below mean level. The water level usually rises during strong winds from SW, through W, to NW, especially in the fall and winter. The water level usually falls during strong winds from SE through E, to NE, especially in late winter and in the spring. Water level information can be obtained from the harbor pilot office.

Gotaalv current entering the harbor of Goteborg has a maximum velocity of 2 knots.

Pilotage

The pilot station for the Goteborg districts at Klippan is in **Goteborgs Hamn** (57˚41.6'N., 11˚55.1'E.). There is a pilot lookout at Vinga where a combined pilot and life-saving vessel is stationed.

Pilots can be provided for the passages N to Marstrand and S to Varberg.

Deep-sea pilots for the North Sea can be provided.

Pilotage is compulsory between 57˚16'N and 57˚50'N, as follows:

1. All Category 1 vessels.
2. Category 2 vessels of 80m length, 15m beam, and 5m draft and over.
3. Category 3 vessels of 90m length, 16m beam, and 5.5m draft and over.

Pilotage is compulsory N of Vinga and between Vinga and Marstrand through the archipelago as follows:

1. All Category 1 vessels.
2. Category 2 and 3 vessels of 70m length, 14m beam, and 4.5m draft and over.

Pilotage is compulsory E of 57˚42.6'N, 11˚57.7'E, as follows:

1. All Category 1 vessels.
2. All vessels carrying explosives of 60m length, 9m beam, and 4.2m draft and over.

Pilots board at Trubaduren Light. A vessel should notify the Traffic Control Center on VHF channel 13.

Pilots board, as follows:

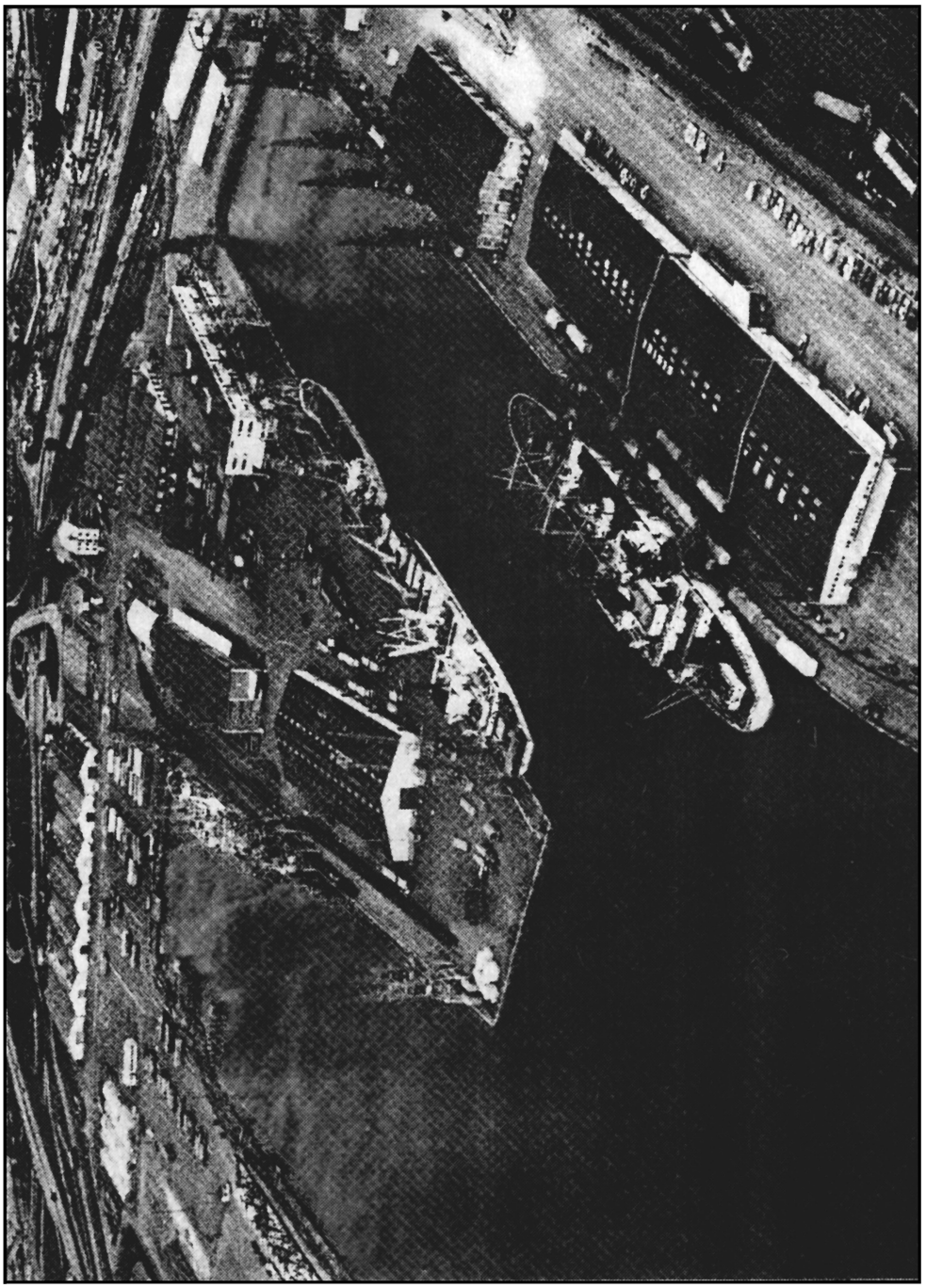
a. 1.2 miles SE of Trubaduren (57˚ 34.5'N., 11˚ 38.8'E.).
b. 2.5 miles SW of Vinga (57 ˚37.0'N., 11˚ 31.8'E.).
c. 2 miles WNW of Vinga (57˚ 38.8'N., 11 ˚32.5'E.).

A Vessel Traffic Management System for the Goteborg area is controlled from the Traffic Control Center (TCC) at Klippan. The system is based on Radar Control and VHF communication. Vessels over 300 grt or exceeding 50m in length should report to the TCC on VHF channel 13; incoming when within 6 miles off Vinga Island; outgoing when leaving the berth.

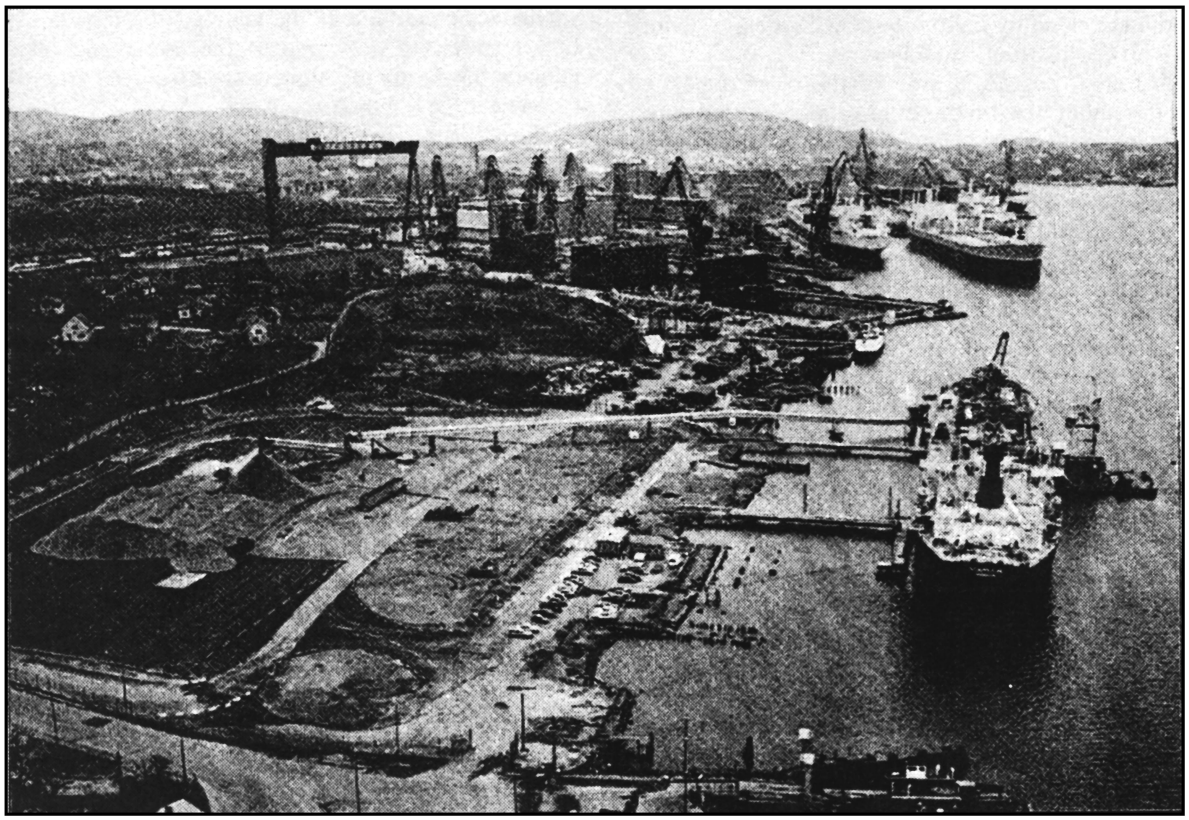
Depths—Limitations

6.8 Ryahamnen, the oil loading and discharge facility on the N side of the river, can receive fully loaded tankers up to 25,000 dwt. It consists of three T-headed jetties and a pier. The cargo turnover includes oil and chemical products, imported to and distributed from this harbor installation. The least depth at Ryahamnen is 8.5m.

Skarvikshamnen, close W of Rya Harbor, is Scandinavia's largest installation for the import, export and domestic distribution of oil products with vessels as well as railroad cars and trucks.



THE FREE PORT, GOTEBORG



THE FARJENAS HARBOR

Refineries usually forward their refined products to Skarvik. Tankers up to 40,000 dwt can be accommodated. The least depth in the harbor is 8m.

Skandiahamnen consists of two areas of reclaimed land with a basin in between, extending from 0.35 mile NW to 1 mile ENE of Nya Alvsborg. Skandia Harbor has a channel with a depth of 9m with range lights leading into it. Skandia Harbor has a least depth of 13m with a total quayage length from 1.8 to 3 miles, making accommodations for more than 20 berths. There are 13 ramps for ro-ro traffic. For ro-ro handling, there are five container cranes with spreaders for 6.1 to 12.2m containers.

The Skandia Harbor is divided into two terminals, the Alvsborg and the Skandia terminal, respectively.

The Alvsborg terminal is a harbor, constructed for modern goods handling using the ro-ro method. Thus it can be referred to as a harbor without cranes. This terminal is divided into two sections; Section W services the short sea traffic and Section E services the transoceanic traffic.

Majnabbehamnen, the facility on the S side of the river and about 0.5 mile above the suspension bridge has 7 berths, with depths alongside ranging from 6.2 to 10m. Two of these berths are ro-ro berths for ferries to Denmark and Germany. It is reported, a vessel 218m long with a draft of 9.4m berthed in the outer part of the Majnabbehamnen basin.

At Fiskehamnen, the fishing harbors on the S side of the river, there is about 920.5m of berthing space with a depth of 5m.

Stigbergskajen, close E of Fiskehamnen, has about 503m of berthage with depths from 7 to 9.9m.

Masthuggskajen, extending E from Stigbergskajen, is about 0.6 mile long with depths from 5 to 5.9m.

Sannegardshamnen, on the N side of the river opposite Fiskehamnen, has about 914.4m of berthing space with depths of 6 to 7m. The facilities former coal harbor E of Eriksbergs yard is used for the import of bulk cargoes of coal and salt.

Lindholmshamnen on the N side of the river, has about 1,030.2m of quayage with depths from 4.5 to 8.8m.

It is reported AB Volvo leases Lindholmen Harbor for the use of their motor vehicle exports to the W and S coasts of the USA, the Middle East, and the Far East.

Frihamnen, the free port opposite the City Center, consists of three basins of which the W basin was formerly known as Lundbyhamnen. The entrance is immediately E of Gotaverken.

The conventional liner traffic is concentrated here but conventional vessels with containers on deck can be serviced by the use of mobile cranes. All quays are serviced by the railway and most have telephones.

Gotaverken, the main ship repair yard, lies E of Lindholmshamnen and has extensive modern repair shops, fitting-out quays, and four floating docks with lifting capacities of 55,000 grt, 35,000 grt, 27,000 grt, and 2,000 grt respectively.

There is about 2,175m of berthing space. Depths alongside these berths vary in depths from 7.5 to 10m.

Additional berths are available at the mooring buoys.

Farjenas Harbor, above the Alvsborg bridge on the N side of the river was built particularly for the import of wood chips which is used as raw material within the pulp industry. The chips are being forwarded by lorries. The facility consists of a quay, a conveyor belt and a surface area of 20,000 sq. meters.

Besides the new paper terminal, Goteborg also has work occuring at the former Arendal Terminal. Two berths are due to open later this year offering ro-ro service. There are also plans to develop a new cruise and passenger terminal offering services between Goteborg and Newcastle.

Harbor Bridges.—The harbor is spanned by four bridges. Alvsborgsbron, the outermost is a suspension bridge, about 0.5 mile within the river entrance. It is 0.2 mile long, with a vertical clearance of 44.8m. There is a depth of 10m of water under the bridge.

Hisingsbron, about 2.5 miles farther upriver, is a swing bridge with two openings. Each opening is 17.4m wide and has a mid-channel depth of 5.8m. The N opening is used by vessels proceeding downstream and the S opening when proceeding upstream.

Gotaalvbron, 3.5 miles above the entrance is a bascule bridge which carries both road and rail traffic. It has three spans over navigable passages; the central span opens vertically. The span is marked by a white lighted screen on the N side and a yellow lighted screen on the S side. The span is floodlit when the bridge is open. The central passage is 20.9m wide and has a clearance of 19.5m above mean water level under the span when closed. The passages under the side spans are each 27m wide, with a clearance of 18.4m above mean water level. The central passage has a depth of 7m, and the side passages have depths of 5.8m at mean water level. Water level indicators are located both upriver and down-river from the bridge. Vessels must always use the side passages unless they are prevented from doing so by the height of their masts. Vessels bound upstream must use the S passage and those bound downstream must use the N passage.

The central span is opened at regular times and at other times upon request. Special signals regulate passage through the central span but none are displayed from the side spans. In case of an emergency, a red light will be displayed on either or both side spans to stop traffic.

Vessels awaiting their turn through the bridge are required to moor as directed. Vessels must not pass each other in the central passage of the bridge, or remain stopped in the fairway within 0.2 mile of the bridge.

A railroad bridge crosses Gotaalv about 1.25 miles above Gotaalvbron. This bridge has two passages, each 18m wide. Vessels proceeding upstream must use the E passage and those proceeding downstream the W passage. Signals governing passage through the bridge are displayed.

Regulations

Speed is restricted to 8 knots inside the W harbor limit between Alvsborgsfjorden and Frihamnen, reducing to 5 knots upstream of Skeppsbron Light, just N of Berth No. 22, to the E harbor limit.

The following are extracts from the harbor regulations presently in force:

Vessels entering the harbor must display their national flag until the customs officers have boarded.

Steam or motor vessels lying at the quays or piers within the limits of the city may not make any sound signals on their whistles; such vessels must not move their engines at any time except immediately before their departure.

In addition to the regulations for preventing collisions at sea, the following by-laws are in force for navigation within the harbor: from sunset to sunrise all vessels underway shall show a low white light astern, visible from right astern to six points on either side; a steam vessel which, owing to her draft or for other reasons, is unable to comply with the regulations for preventing collisions at sea, must sound four short blasts on her whistle, in which case an approaching vessel must keep out of her way; a vessel crossing the river must give way to a vessel proceeding up or down river.

Signals

When ice conditions in the vicinity of Vinga are such as to restrict traffic to only one of the two principal approach channels the following signals are displayed from the signal station near the lighthouse:

Two black square shapes, disposed vertically, indicate that traffic must proceed N of Vinga.

Three similar shapes, disposed vertically, indicate that traffic must proceed S of Vinga.

Anchorage

Anchorage can be taken in the S part of Hakefjorden in 14.6 to 18.3m, clay. Strong SW winds raise a heavy swell in this anchorage.

Sheltered anchorage can be taken in Rivofjord in 12.8 to 14.6m, clay, midway between Gaveskar and Dynan.

Anchorage can be taken in Alvsborgsfjorden in a depth of 9.1m, clay, outside of the dredged channel.

6.9 Prohibited Anchorage and Restricted Areas.—Anchorage is prohibited in the vicinity of any of the submarine cables which cross the various fjords in the approaches to Goteborg. The landing places of these cables are marked by notice boards which are illuminated at night. The cables which extend from Botto to Gaveskar and then to the N coast of Branno are marked by cask buoys, painted red and white with the word "Kabel" in black letters. When ice forms, these buoys are withdrawn. The landing places of these latter cables are also marked by notice boards, illuminated at night.

Anchorage is prohibited in the dredged channel which leads through Alvsborgsfjorden to Goteborg.

Styrso lies in a restricted area. Semi-restricted areas, best seen on the chart, surround Styrso and Bjorko.

The following authorized channels may be used, without obtaining permission, when passing through the restricted and semi-restricted areas:

1. The pilotage channels from W and SE of Vinga to Goteborg and Marstrand.
2. The pilotage channels from Goteborg to Marstrand.
3. The pilotage channels from Tistlarna through Rivofjord to Marstrand.

Only direct passages without stopping, may be made along these channels. If a vessel has to anchor other than in an authorized anchorage, the police, custom, pilotage, or military authorities must be informed.

Vessels may stay without permission in the authorized anchorages in restricted or semi-restricted areas for not more than 72 hours, between the times of entering and leaving the area concerned. For vessels of less than 20 grt, there are special regulations.

Permission to stay longer in an area should be sought from the Governor of the province; other requests should be addressed to the Commander of the Defense of the area.

For a complete description of the limits of the restricted, semi-restricted, and mined areas in the approaches to Goteborg, see Pub. 140 Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

Caution

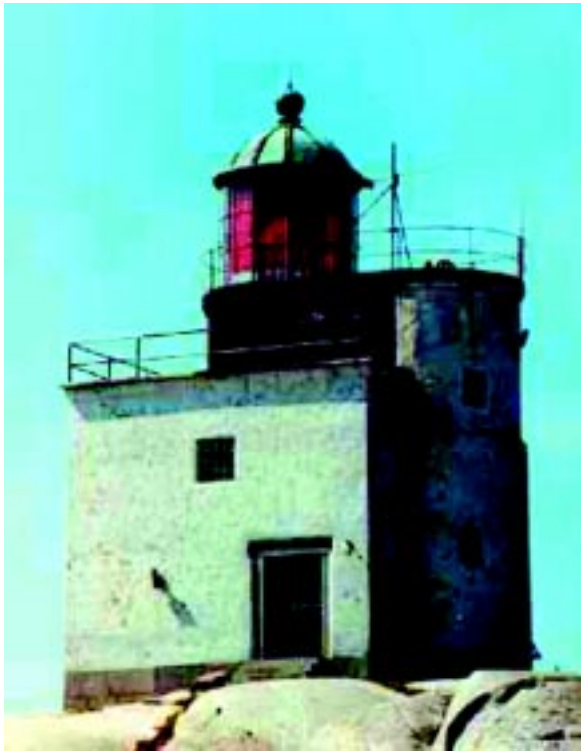
Vessels should exercise great caution when passing the floating drydocks on the N side of Gotaalv as they may be submerged or in a dangerous position. Under such conditions, two red flags by day or three red lights by night, vertically disposed, will be displayed.

Deep Water Channel From Trubaduran to Goteborg

A vessel using this principal passage which leads through Bottoleden, Vingasand, Danafjorden, and Hakefjorden should steer to pass about 0.5 mile SE of the lighthouse and then steer 029˚ for the entrance range beacons. The front beacon stands on **Klaveskar** (57˚39'N., 11˚43'E.). When Buskars Knote Light is abeam to port, Knoten Lighted Whistle Buoy should be rounded and Stora Varholmen Lighthouse should be steered for on a course of 005.5˚. When Dana Svartskar Lighthouse bears 039˚, course should be altered to put it ahead on that bearing, which leads to the entrance to the buoyed channel leading into Hakefjorden. Having entered the channel, course should be adjusted to follow the buoys marking the limits of the channel. Vessels should pass about midway between Knippelholmen and Hunnebadan Lighthouses. When abeam of the latter lighthouse, course should be altered to bring the lighted beacons on the S side of the river in range 079.5˚ which leads through the buoyed channel into the fairway of the river.

At night the approach is made by steering for the white sector of Buskars Knote Light between the bearings of 013˚ and 029˚. Having rounded Knoten Lighted Whistle Buoy course should be altered to 005.5˚ heading for Stor Varholmen Light and keeping in the white sector of that light between the bearings of 003.5˚ and 007.5˚. When Tanneskar Light changes from red to white on a bearing of 238˚, course should be altered to 039˚ with Dana Svartskar Light ahead. Care should be taken to remain within the limits of the white sector of this light between the bearings of 035.5˚ and 043˚ which leads between the two outer lighted buoys marking the approach to the buoyed entrance channel leading into Hakefjorden.

The directions previously given for the day passage should then be followed. These will lead to the entrance of the river at Goteborg.

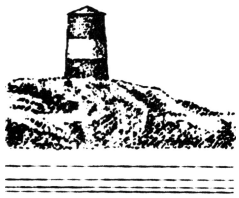


TISTLARNA LIGHTHOUSE

6.10 Directions—Southern Inner Channel to Goteborg.—Approaching from seaward, and when about 2 miles S of Yttre Tistlarna, bring Matskar Beacon in range 012.5˚ with **Stora Ros** (57˚37'N., 11˚47'E.) which will lead about 0.25 mile W of Norra Knalten. When Pusteskar, S of Yttre Tistlarna, bears 305˚ steer for the SE side of Inre Tistlarna on a course of about 018˚ passing E of Lilla Ryggen.

When Matskar Beacon is abeam to port, distance about 182.9m, course should be altered NE to bring the middle of Knallskar, a small islet about 0.5 mile SE of Yttre Tistlarna Light in range 229˚ astern with the E side of Matskar which will lead through the shoals on both sides of the channel.

When Vinga Lighthouse is in range about 316˚ with the SW extremity of **Kalvholm** (57˚32'N., 11˚46'E.) course should be shaped to pass about 365.8m E of Valo Lighthouse.



Matskar Beacon
YTTRE TISTLARNA

After passing Valo Lighthouse, a N course should be steered to pass between Vallholm, an islet close N of Valo, and Vallholmsbaden, a shoal with a depth of less than 1.8m which is marked on its W side by a buoy. Vrango anchorage lies about 0.5 mile N of Vallholmsbaden.

Northward of Vrango anchorage, pass close E of Donso, Kopstadso, Aspero, and Rivo, and then into Rivofjord, joining the main channel from W near Knippelholmen.

The numerous lights and buoys marking the limits of the fairway assist in the navigation of this part of the inner channel.

Caution.—Vessels without local knowledge, or without a pilot aboard, should not attempt any of the channels in the S approaches to Goteborg.

Yttre Tistlarna to Morups Tange.—In general, the coast between Yttre Tistlarna and Sao about 6 miles E on the mainland, and then to **Morass Tange,** (56˚55'N., 12˚22'E.), a small peninsula about 38 miles SE, is very irregular and fronted by numerous small islets and sunken dangers.

Kungsbackafjorden, the largest of the coastal indentations, is entered about 14 miles SE of Yttre Tistlarna and extends about 7.75 miles to the N. Between this fjord and Morups Tange, the coast presents a low profile with a few hills rising inland.

The coast between Yttre Tistlarna and Nidingen Island SSE, consists of a chain of islets and sunken dangers that exist within 4 to 4.5 miles off this part of the coast. To the E of the chain, an inner harbor leads to the S inner channel to Goteborg.

Between Saro and the fjord of Kungsbacka the depths are very irregular. From Kungsbackafjorden to Varberg, the 20m curve lies from 0.5 to 4 miles offshore and between Varberg and Morups Tange, it lies from about 1 to 3 miles off the coast. Seaward of this curve, numerous detached patches with depths of 20m and less are to be found. Some of these shoals are marked by awash rocks.

Off-lying Dangers—Swedish Coast

6.11 Yttre Viten (57˚29'N., 11˚46'E.), a rock awash with a 7.3m patch about 0.3 mile S of it, lies on the W side of one of the recommended tracks, discussed earlier, leading N to the inner passage to Goteborg. A 6. 1 m shoal lies on the same side of the channel about 1.5 miles to the N.

On the E side of the channel entrance, Inre Viten about 1 mile E of Yttre Viten is a rock partly awash with a 4.9m shoal and a 9.lm shoal within 0.34 mile S of it.

Riseberget, a 4.3m shoal on the E side of the channel and somewhat to the N of Inre and Yttre Viten is a danger. All of these dangers are marked by buoys.

Riseberget, Tranebrakorna presents another off-lying hazard on this part of the coast. This group of dark awash rocks, lies on a detached shoal with depths from 2.1 to 11m about 0.5 mile N of Kungen. The above dangers are covered by a red sector of Kungen Light.

Kungen (57˚27'N., 11˚50'E.), a rocky islet marked by a light, lies on a small shoal with depths of 11m and less. A lighted buoy is moored about 0.75 mile E of the light.

Vastra Ron and Ostra Ron, are two high islets, lying about 1.75 miles S of Kungen. A detached 7.3m patch, marked by a buoy on its W side, lies about 0.75 mile ESE of the islets.

KUNGEN LIGHT

HALLANDS SVARTSKAR LIGHT

Off the coast, at approximately 4.75 miles S of Kungen is **Hallands Svartskar Light** (57˚22'N., 11˚51'E.) Svartskar is a dark colored, rocky islet. Other dangers near Svartskar are two detached shoals to the N; Torget and Sodra Vassaberg. A buoy marks the E side of both of these off-lying dangers.

Fjarehalsbade, Grundabade, and Skaltaren, are three detached shoals of several which lie within 2 miles S and 1.5 miles SW of Svartskar. Skaltaren, the S most shoal, has a least depth of 9.1m.

A buoy marks the W side of Grundabade.

Nidingen (57˚18'N., 11˚54'E.), a low, sandy islet, is surrounded by shoals and reefs, awash in places. The islet is marked by a light, with two disused lighthouses on its W side and two beacons on its E side. A radar and radio watch are maintained at Nidingen Lighthouse and a radio beacon transmits from the lighthouse.

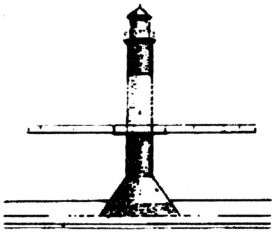
Lilleland Light is shown from a floodlit black tower, standing on the outermost part of the shoal NE of Nidingen. Several detached shoals, with depths from 5.5 to 11m, lie within 1 mile SE through SW of Nidingen Lighthouse. Buoys mark the SE and SW shoals.

Coast General.—Between Nidingen and Morups Tange, about 27 miles SSE, all the coastal dangers lie within about 2 miles seaward of a line joining the prominent points. These dangers are described under the principal description of that part of the coast which they front. Those shoals which lie well offshore are described in Sector 7.

6.12 Saro (57˚30'N., 11˚55'E.), on the mainland, is a high, wooded peninsula, and is conspicuous because of its contrast with the adjacent barren area. Foul ground covered by numerous rocks, islets, and other dangers extends up to 2.25 miles W of the peninsula.

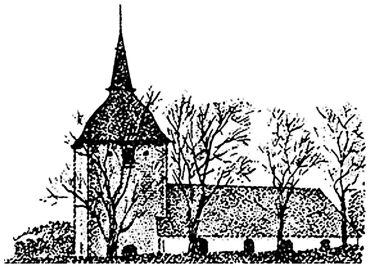
Keholmens Hamn (57˚31'N., 11˚55'E.) is an anchorage inside the islands, located about 1 mile N of the outer extremity

NIDINGEN LIGHTHOUSE (FAR LEFT) AND DISUSED TOWERS



LILLELAND LIGHT

of Saro. Depths range from 6.4 to 7.6m, clay, but there are limitations as vessels with a draft not exceeding 4.1m can use this anchorage. Local knowledge is necessary.



VALLDA CHURCH

Aspect.—The high pointed tower of Vallda Church, about 3 miles ESE of Saro and the black spire of Onsala Church, about 4 miles S of Vallda Church, are visible for a considerable distance seaward. There are other good landmarks, such as the radio masts about 2.5 and 5.25 miles S of Saro.

Numerous shallow bays of little commercial importance indent the coast between Saro and Fjarhals, a peninsula about 6.5 miles to the S.

Many shoals, some with small islets and rocks on them, lie up to 1.5 miles offshore along this section of coast.

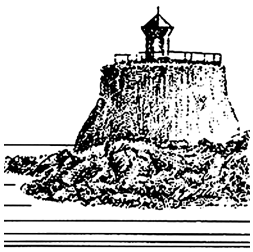
Ockerosund (57˚23'N., 11˚56'E.) Although this spacious harbor, entered between Fjarhals and Okero, an island about 1 mile SSE is seldom used for safe refuge, it provides anchorage in from 6.4 to 7.6m, sand and clay. Winds from the SW and WSW raise some sea in this anchorage but vessels with good ground tackle are not endangered. Vessels with a draft not exceeding 6.4m can enter the sound.

Breda Gapet, the entrance channel leading into the sound, lies between Stensholmar, an islet about 1mile S of Fjarhals, and some islets and rocks lying on the coastal bank which extends from the NW side of Ockero. Breda Krakor, the outermost rock on the S side of the channel, is marked by a white cairn with a black band.

A 6m patch lies on the N side of the fairway, 0.3 mile NNW of Breda Krakor.

Pilots for Ockerosund can be obtained from Vinga.

Directions.—From a position about 3 miles SW of Hallands Svartskar Light, bring Onsala Church to bear 059˚ and steer on that bearing, which leads to the entrance to Breda Gapet. To avoid Djupeknolarna, about 1.25 miles SSW of Hallands Svartskar Light, when a heavy sea is running, steer 101˚ for Hallsundsudde Beacon (57˚21'N., 12˚00'E.) until Onsala Church bears 059˚. Within Breda Gapet, favor the S side of the channel where the depths are greater than those on the N side. After passing through Breda Gapet, anchor in the middle of Ockerosund with Fjarhals cairn bearing 329˚, distance about 1 mile.



Fjordskar Lighthouse
KUNGSBACKAFJORD

Monster (57˚22'N., 11˚58'E.), the broad peninsula lying close SE of Ockero, is marked by a disused pilot lookout station on Monsterudde.

Kaggebade, a group of shoal patches with a least depth of 1.5m, lies between 1.25 miles and 1.5 miles W of the disused pilot lookout station. A buoy marks the W side of these dangers. Skarvgrund, with depths from 8 to 9.7m lies within 0.34 mile S of Kaggebade. Two detached shoals with depths of 11m and less lie about 0.5 mile N and 0.25 mile E of Kaggebade.

6.13 Malon (57˚20'N., 11˚58'E.), a low, barren island of a yellowish hue is separated from Monsterudde to the N by Malosund, a narrow passage obstructed by several islets and rocks. Three piles of stones, known as Malo Ros stand on the highest part of the island.

An irregular shoal with depths of 11m and less extends up to 1 mile W from the W end of the island and the same distance SW from the S end of the island. A buoy marks the S side of the outer part of the shoal extending SW and a buoy marks the same side of a detached 8m patch about 0.5 mile farther W.

Malo Hamn (57˚22'N., 11˚59'E.) is a sheltered harbor of moderate depths which indents the coast between Monster, the wide peninsula, and Skallanas, about 1 mile to the E.

Anchorage is available in the central part of the harbor in depths from 6.7 to 9.1m, weed and sand over clay.

Vessels with a draft of 4.9m can approach Malo Hamn through Malosund and vessels with a draft of 5.9m can approach from the S between Malon and Hallsundsudde. Numerous dangers lie in the entrance to this harbor and only vessels with local knowledge or a pilot aboard should attempt to enter. Pilots can be obtained from Vinga and Goteborg.

Skalla Hamn, the next inlet to the E, provides anchorage to small vessels in depths from 4.9 to 7.3m but a swell sets in with S winds.

Hallsundsudde Beacon, which consists of a slatted tripod with a barrel topmark, stands near the S end of Hallsundsudde, the peninsula which forms the E side of Skalla Hamn.

Kungsbackafjorden

Kungsbackafjorden (57˚21'N., 12˚03'E.), is entered between Hallsundsudde and Nasbokrok, 2 miles E and then runs in a N direction for about 7.5 miles. It affords excellent anchorage for a large number of vessels in its W part.

Depths range from 16.5 to 37.5m in the entrance, over 11m in the fairway up to 4.75 miles above the entrance, and then shoals rapidly toward the head of the fjord.

Vessels drawing up to 9.9m can be accommodated in the anchorage E of Onsala Church. Ice frequently closes the fjord to navigation from December to March.

There are several islets in the fjord, most of which are located within about 1.25 miles of the E shore.

Fjordskar (57˚21'N., 12˚01'E.), the islet off the entrance, is the only islet marked by a light. Fjordskar lies about 0.75 mile NE of Hallsundsudde Beacon.

Pilots can be obtained from Goteborg.

Several detached shoal patches lie in the approach to the fjord. Hultingsgrunden, with a least depth of 7.3m, and Naskroksgrund, a 9.lm patch, lie about 2 miles SSE and SE, respectively, of Fjordskar. Hogardsgrund, with a least depth of 10m lies about 1.5 miles S of Fjordskar.

Gottskar (57˚23'N., 12˚02'E.), serving as a fishing and boat harbor, and also as a resort area, is located on the W side of the fjord, protected by a breakwater.

Depths within the harbor, range from 2.9 to 4m. A stone quay 40m long, has depths alongside of 4m. A pontoon jetty 70m long has depths of 4m on its S side and from 1 to 2m on its N side. In the inner basin, situated N of the pontoon jetty, there are six more short pontoons, with depths of 1 to 3m alongside for yachts.

Kungsbacka, the principal town, lies at the head of the fjord and can be reached by small craft through a dredged channel.

Depths within the harbor are shallow.

Directions.—Approach Kungsbackafjorden, with Hallsundsudde Beacon bearing between 004˚ and 029˚. When the cairn on Romno comes in range 031˚ with Yttre Lon, an islet about 0.5 mile SSW, steer in on this range which leads between Hallsundsudde and Hogardsgrund. On approaching Fjordskar, steer to pass about 0.1 mile E of the lighthouse and having rounded it, steer a mid-channel course of about 017˚ through the W part of the fjord. Anchorage can be taken about 1 mile ESE of Onsala Church in depths of 11.4 to 18.3m clay.

6.14 Vendelsofjorden (57˚18'N., 12˚08'E.), a small body of water of little commercial importance, is entered between Nasbroken and Ringhals to the S. Texleberget, a fairly high, steep hill, rises about 10 miles ENE of Nasbroken and is conspicuous from seaward when viewed from a position S of Nidingen. A small fishing harbor is located at Sallebacka on the SE side of the fjord.

A number of islets, rocks, and detached shoals lie up to 3 miles offshore across the central part of the fjord and then extend about 2.25 miles SW to partially obstruct the approach to the recommended anchorage E of the islet of Vendelso.

Anchorage.—Anchorage, sheltered from all but SW winds, can be taken in depths from 6.7 to 10m, sand and gravel, about 0.25 mile E of the SE part of Vendelso. Vessels drawing up to 7m can approach this anchorage. Pilots can be obtained from Halmstad.

Directions.—A course of 048˚ should be steered to pass about midway between Ringhals and Sodra Ledskar about 1 mile WNW. Care should be taken to avoid Baggen and the

other dangers which lie within 1 mile SW of Ringhals. Having passed Knarrskar, an islet about 0.25 mile S of Vendelso, steer NNE to the anchorage.

Batfjorden (57˚14'N., 12˚06'E.), a narrow, shallow body of water, is entered between Ringhals on the N and Krogstadsudde on the S. A buoyed, dredged channel leads through the shoals which lie on both sides of the entrance and then to the two small fishing harbors within the fjord. Vessels drawing up to 3.3m can be accommodated.

A pilot can be obtained from Halmstad.

Videberg, a small fishing harbor on the N side of the fjord, 0.75 mile inside of the entrance, is suitable for vessels with a maximum draft of 3.6m. The entrance lies between two breakwaters. Inside the harbor there is a quay 105m long, which is used by fishing vessels.

Videberg Kraftverkenshamn (Ringhals) comprises a 65m long quay on the NE side of Videberg NE breakwater. It serves Ringhals power station. There is a 120 ton crane on the quay and a ro-ro berth at its NW end. The depths in the approach channel and alongside are 6m. The area off the quay is prohibited to vessels except those servicing the power station and those with berths within the area.

Bua Hamn, another small fishing harbor on the S side of the fjord has a quay 130m long which has been dredged to 4.5m. Range lights are shown.

Olai Rose Roda range lights, with triangular daymarks, in line bearing 307˚, on the N side of the fjord NW of Bua Hamn. They lead out of the channel.

Norra Horta (57˚13'N., 12˚06'E.) and Sodra Horta, two high, rocky islets, are the largest of several islets which lie within 1 mile of the coast between Krogstadsudde and Klosterfjorden, about 3 miles SE. A shoal with a least depth of 5.5m lies between 0.5 mile W and 1 mile SW of the latter islet.

Anchorage.—Anchorage can be taken in depths from 8.5 to 11m between Norra Horta and the mainland. The approach is made between Norra and Sodra Horta and is available to vessels drawing up to 6m.

Klosterfjorden (57˚12'N., 12˚09'E.), between Sodra Horta and Norra Arnasudde to the SE, is shallow in its inner part.

Anchorage.—Anchorage can be taken in depths from 6.7 to 9.1m, sand and clay, about 0.2 mile SW of Krakan, an awash rock lying about 1.5 miles E of Sodra Horta. Small vessels can anchor in 3.7m, sand, about 0.75 mile farther in. Strong W winds send in a heavy sea.

Pilots can be obtained from Varberg.

Directions.—To approach the outer anchorage steer 045˚ for Stora Lahall, a village with a windmill located on the N side of the fjord. On this course Stora Lahall will be seen open SE of Prastskar, an islet about 0.75 mile SSE of Sodra Horta. This course leads close NE of an 8.2m patch lying about 0.25 mile SSW of Prastskar. Having passed Hampsholm, an islet about 0.25 mile WNW of Norra Arnasudde, steer for the anchorage SW of Krakan. Caution must be taken to properly identify Stora Lahall and the windmill. Other villages with windmills are located in the vicinity.

Klaback, a high islet about 3 miles S of Sodra Horta, is the outermost islet lying S of Klosterfjorden. Because of numerous unmarked dangers, vessels without local knowledge should keep W of a line joining Prastskar, Klaback, and the island of Getteron about 3.5 miles SE. Farnyet, an awash rock with a 2.7m patch close SW of it, lies about 1.75 miles SE of Klaback. This rock is the outermost danger of many found between Klaback and Getteron.

Kalkgrund, partly awash, extends about 0.6 mile S from Stora Nas the W extremity of Getteron. A buoy marks the SW side of this danger.

Ruggen, a 4.3m, patch about 1 mile SE of Kalkgrund, with an 8.2m patch about 0.25 mile farther SE, are the southernmost dangers which lie on the W side of the approach channel leading to Varberg. Between these dangers and Skrivareklippan, an islet about 0.75 mile N, the dangers which border the W side of the channel are buoyed.

Sjalklippan, an awash rock, lies on the E side of the approach channel about 0.6 mile SSE of Skrivareklippan. A cairn with a radar reflector stands on this rock.

Varberg (57˚07'N., 12˚15'E.)

World Port Index No. 24030

6.15 The port of Varberg, of easy access, and located on the mainland to the SE of Getteron is one of the principal outlets for timber products. Ample berthing facilities are provided for vessels of moderate draft in the artificial harbor protected by two stone moles which fronts this small industrial and trading town. Vessels of medium draft can be accommodated in the harbor, and generally, the outer roads provide good sheltered anchorage in all weather.

Entry into the harbor can be undertaken at anytime except when SW gales are blowing.

Tides—Currents.—The difference between the mean water level and the average HW and LW levels is about 0.6m. The water level rises with W winds and falls with S winds. The maximum range occurs in the spring and autumn.

Depths—Limitations.—The approach channel has been dredged to a depth of 11m over a width of 100m and can handle vessels with a maximum draft of 10m. The Passenger Harbor has been dredged to 11m. The Industrial Harbor has been dredged to 8m and can handle a maximum draft of 7.5m.

There is a fixed ro-ro berth at the N end of the harbor with a depth of 8m, alongside.

An oil jetty 80m long has a depth alongside of 8m.

Aspect.—Conspicuous in the approach to Varberg is **Tronningeberget** (57˚08'N., 12˚18'E.) located 2 miles NE of the city. This hill is 71m high and is sheer on its S side. The **Varberg Fortress** (57˚06'N., 12˚15'E.), a conspicuous yellow structure, visible up to 15 miles seaward, is located on the W side of the city.

Other useful aids are the high steeple of Varberg church; a water tower which resembles a castle located NE of the city; and several radio towers between 4.5 to 5.25 miles E of the city which are visible for some distance, seaward. Traslov Church, 2 miles E of Varberg Fortress, stands on high ground and is white and readily distinguished from the church at Varberg.

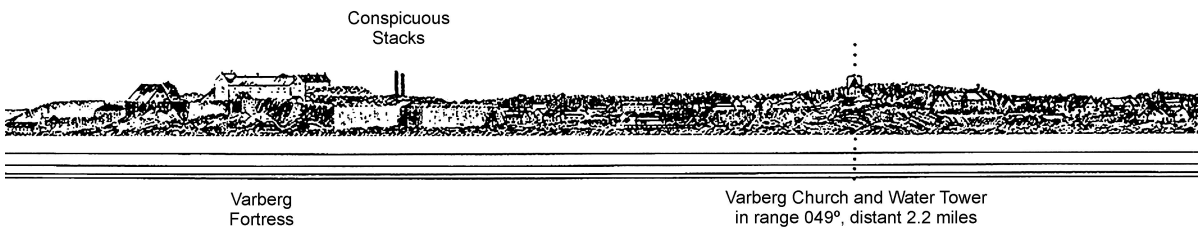
Pilotage.—Pilotage is compulsory for dry cargo vessels over 1,600 grt and for tankers over 1,200 grt. The pilot station at

Photo courtesy of the Port of Varberg

PORT OF VARBERG

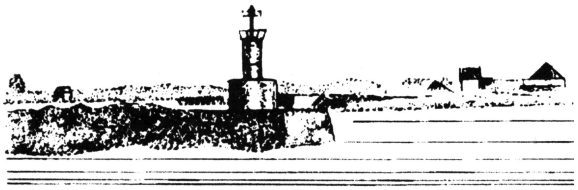
Photo courtesy of Terminal West AB

TERMINAL WEST AB IN THE PORT OF VARBERG



VARBERG LANDMARKS

TRASLOV CHURCH



GLOMMEN LIGHT

Varberg is located on the seaward side of the Varberg Fortress. The station maintains a radar and VHF radiotelephone watch between 0500 and 2100. Pilots may also be ordered by radio from Halmstad, about 30 miles S where a continuous VHF is maintained. A speed limit of 5 knots is in force inside the harbor.

The pilot boards about 1.5 miles SSW of Varberg Fortress.

Anchorage.—Small vessels can anchor in depths from 6 to 7m, sand and clay, in the roadstead between Varberg Fortress and Skrivareklippan, in case of necessity. The anchorage area is confined, as vessels are not permitted to anchor in the dredged channel.

Caution.—During strong SW gales, vessels with a draft exceeding 6.4m should not attempt to enter the harbor.

Swedish coast.—The coast from Subbeberget, a point about 1 mile S of Varberg, then S to the island of Rodskar, is fronted with shoal ground, extending up to 0.5 mile offshore. A white beacon with a black band stands on the island and is the most prominent mark in the S approach to Varberg. To the W of the Rodskar Beacon, at 0.5 mile, there is a depth of 5.5m, marked by a buoy.

Traslov (57˚04'N., 12˚17'E.), a small fishing port, lies along the SE shore of the shallow bay SE of Rodskar. The artificial harbor is approached through a dredged channel with a depth of 5.5m which leads through two converging breakwaters in the harbor basins.

Depths within these basins range from 3 to 5m. Pilots can be obtained from Varberg at any time, and from Falkenberg by day.

Between Traslov and Galtaback, about 2 miles to the SE, dangers again front the coast, and extend out from 1 to 1.5 miles, offshore. Some of these dangers (shoals), are marked by buoys.

Galtaback (57˚02'N., 12˚19'E.), a small fishing harbor with shallow depths, is entered through a dredged channel, about 0.2 mile in length, which is subject to silting. In 1986, the channel in the harbor was dredged to 2.5m. In the S basin, there are two quays with depths of about 2m alongside. In the N basin, there is a 160m long jetty with depths from 0.7 to 2m alongside.

Between Galtaback and Glommen, another small fishing harbor about 6 miles SSE, the coast is bordered by a coastal bank fronted by several detached shoals which lie up to 1.75 miles seaward of a line joining these two harbors. Some of the outer shoals are marked by buoys.

Glommaryggen, with a depth of 5.5m, lies on the N side of the approach to Glommen and about 0.75 mile W of the harbor entrance. Several patches with depths of 10 to 11m, lie up to 0.75 mile W of Glommaryggen.

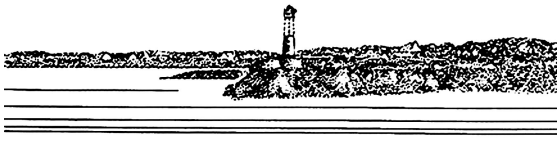
Glommen (56˚56'N., 12˚21'E.), a small fishing harbor formed by two breakwaters, consists of an inner and outer harbor with depths of 5m in the outer basin and 4m in the inner basin. Depths alongside the quays are somewhat less. Strong NW winds raise a heavy sea and strong currents outside the entrance. Entry should not be attempted without local knowledge. Pilots can be obtained from Halmstad.

6.16 Morups Tange (56˚55'N., 12˚22'E.), the point located close S of Glommen, is fronted by a narrow spit which extends about 1 mile W of it. Skorren, over which there is a least depth of 2.3m, lies at the outer end of this spit. Two detached shoals, with depths of 10m lie 1.5 miles and 1.75 miles WSW of Morups Tange. A buoy marks a detached shoal, with a least depth of 10m, which lies about 1 mile SSW of the point.

Morups Tange to Kullen

The coast between Morups Tange and Tjuvhalsudde, about 21 miles SSE, is fairly regular with no large indentations. The land backing the coast is low as far as Falkenberg, about 4.5 miles ESE, but from there to Tjuvhalsudde the land is hilly.

Between Tjuvhalsudde and the outer extremity of Kullen, about 23 miles SSW, the coast is indented by Laholmsbukten and Skalderviken, two large bays separated by a broad, hilly peninsula. Hallands Vadero, an island surrounded by foul ground, lies off the W side of this peninsula. A range of hills extends along the SW side of Laholmsbukten and another range rises from the SW side of Skalderviken and extends to the extremity of Kullen.



TRASLOV LIGHT

Falkenberg and Halmstad are the only two ports of any commercial importance, the latter port being located at the mouth of the Nissan, a river flowing into the N part of Laholmsbukten. Several anchorages are available along this section of the coast.

Aspect.—Between Morups Tange and Falkenberg, 5 miles SSE, the coast is low and there are few outstanding features. A

MORUPS TANGE LIGHTHOUSE

MORUPS CHURCH

distinguishing mark is Stutarna Beacon which stands on an awash rock about 3 miles SE of Morups Tange Light.

In the approaches to Falkenberg, numerous shoals with depths of 11m and less lie up to 1 mile seaward of the breakwaters with other detached shoals lying up to 1 mile farther W and 2.75 miles farther SE. Knolagrund, the shoalest patch on the E side of the entrance channel, has a least depth of 4.3m and lies about 2.25 miles SSE of the breakwater light. A buoy marks this danger. Marsten Beacon marks an awash rock about 3.5 miles SSE of the same light.

Skottarevet reef with a least depth of 0.9m and marked by a buoy, lies on the W side of the entrance about 1 mile SSE of Stutarna Beacon.

Caution.—Between Morups Tange and Kullen, shoal depths of 11m and less, which might be dangerous to shipping are contained within the coastal bank, which nowhere lies more than 2.5 miles offshore and in most cases extends only about 1 to 1.25 miles offshore.

The detached shoal patches and isolated wrecks which lie outside of the coastal bank along this part of coast have depths which range from 10 to 17.7m, are well charted, and by prudent navigation can easily be avoided.

In the inner reaches of the large bay of Skalderviken, the coastal bank extends about 3 miles offshore but this bay is not frequented on a regular basis by shipping.

Those dangers which lie in the approaches to the ports and off the prominent points are described beside the principal description of the related feature.

Bottom nets, marked by piles or buoys, may be encountered off the coast between Morups Tange and Fagelholm about 11.5 miles to the SE. Vessels may not exceed a speed of 5 knots when within 183m of these nets.

Falkenberg (56˚54'N., 12˚30'E.)

World Port Index No. 24040

6.17 Falkenberg lies at the mouth of the river Atran, a small river which discharges into the sea between two breakwaters. Berthing facilities are provided abreast the town for vessels of moderate draft.

Ice.—The harbor is ice free except in severe winters when it may be closed during January and February. Southerly and SE winds cause ice accumulation in the harbor entrance.

Tides—Currents.—The differences between mean water level and normal H and LW levels are 0.7m and 3m, respectively. The highest water level usually occurs in the spring and autumn with W winds, and the lowest level occurs from March to the middle of May with E and S winds.

At times, a current sets NW or SE across the entrance of the breakwater heads. This current changes direction several times a day and may attain a rate of 3 to 4 knots.

Depths—Limitations.—Vessels drawing up to 6.5m, with lengths to 160m, can be accommodated in the dredged channel and within the harbor. Lightly laden vessels should not attempt to enter with SW winds in excess of force 7.

The approach channel leading into the harbor from the sea buoy has a controlling depth of 6.3m. Depths within the harbor range from 7m off the principal berths to depths of 5.2m. They decrease to 5m at a distance of 0.3 mile below the bridge. There is a turning basin 150m in diameter abreast the root of the W-breakwater.

The harbor has about 808.7m of quayage available for handling cargo.

An additional 150m of quay space is to be constructed.

Aspect.—The following landmarks are useful aids when approaching Falkenberg: Staving Church, with a pointed spire, about 4 miles E of Morups Tange Light; a 59.1m hill about 1 mile farther E; and Falkenberg old and new churches within the town. There are several other churches in the town that are conspicuous but are difficult to identify.

Pilotage.—Pilotage is compulsory and available for vessels from 0500 to 1900. There is a pilot lookout station. Pilots board in the vicinity of the approach lighted buoy.

PORT OF FALKENBERG

Regulations.—Vessels drawing more than 2.4m must not exceed a speed of 4 knots within the harbor.

Anchorage.—Anchorage is prohibited in the vicinity of a submarine cable laid across the river close S of the railway bridge. Anchorage is also prohibited anywhere in the entrance channel.

Directions.—The lighted buoy should be approached with Falkenberg Lighthouse ahead, bearing 025˚, and this course should be maintained until near the entrance, passing between a buoy marking the SE side of a 7.3m shoal, and a buoy marking the NW side of an 8.5m shoal, which both lie 0.65 mile SE of the harbor entrance.

Falkenbergs Hamn (56˚53'N., 12˚30'E.) extends for 1 mile up the river and is spanned at its N end by a fixed rail bridge under which the channel is 30m wide with a vertical clearance of 5.3m. A second fixed bridge across the harbor with a vertical clearance of 4m lies 0.1 mile SW of the rail bridge.

Swedish Coast

Off the coast between Falkenburg and Tylo, 17 miles SE, shoals extend as much as 2 miles offshore, particularly in the N part of this coastal stretch. One shoal is located about 1.5 miles SE of Marsten Beacon, with a depth of 5.8m. There are also several sandy beach areas between Falkenburg and **Tylo** (56˚38'N., 12˚43'E.).

A good mark on the coast is the high peak of **Steningberget** (56˚47'N., 12˚40'E.). It is the highest part of Skallaberget, a ridge which slopes gradually SSW to the coast. Harplinge Church stands about 3.5 miles SE of this peak, and close E of this church is Nyarsasen, a 142.3m hill.

Busoteteven (56˚43'N., 12˚36'E.), a reef awash with some awash rocks on it, lies up to 1 mile offshore in the vicinity of the S spur of Skallaberget. Several patches with depths from 6 to 11m extend about 0.5 mile farther offshore and are marked by a buoy. Tylo is the small islet, lying off the coast about 5.75 miles SSE of the above reef. A disused lighthouse stands on the islet.

Tylogrund, with a depth of 0.9m lies about 0.5 mile SSW of Tylo. The shoal with a buoy marking its NW side, has a red tower, with a white top and white helicopter platform standing on its S end.

TYLO DISUSED LIGHTHOUSE

Caution.—An area within which firing takes place extends 6 miles to seaward from **Ringenas** (56˚41'N., 12˚41'E.) and vessels are prohibited from remaining in the area while firing is taking place. A warning light is shown from a tower, 25m high at Ringenas when firing is in progress.

Laholmsbukten

6.18 Laholmsbukten (56˚34'N., 12˚48'E.) is a bay with constant depths and few dangers. In the greatest part of the bay, there is anchorage with good holding ground of sand and clay in depths from 14.6 to 18.3m. The E shore of the bay is low and is of light color.

Halmstad, with its harbor is situated in the NE corner of the bay.

Hallandsasen, the range of hills which rises to a height of 225.9m, extends from Hoghallaudde along the entire S side of the bay. Knosen, a 153m hill about 1 mile SE of Hoghallaudde is the highest elevation in the NW part of this range and shows up best on a SE bearing. This part of the coast bears some resemblance to Kullen, the S entrance point to Skalderviken about 12 miles SW, and for this reason has sometimes been called Falska Kullen.

Several churches found along the shores of the bay are good landmarks from seaward. Sondrum Church, painted white with a tall black spire, stands about 3 miles NE of Tjuvhalsudde and Vapno Church stands about 2 miles farther NE. Halmstad Church stands in the town of Halmstad. Churches stand in the towns of Bastad and Ostra Karup on the S side of Laholmsbukten.

Grotvik (56˚38'N., 12˚46'E.), is a small harbor, used as a loading and fishing port and situated 2.5 miles E of Tylogrund Lighthouse. The entrance is 25m wide. Vessels drawing up to 2.3m can enter the harbor. The outer harbor has a 30m long quay with depths from 2.3 to 3m alongside. At Grotvik, there are also pontoons for berthing yachts with depths from 1.5 to 2m. The inner harbor can only be used by small boats.

Between Grotvik and Skaret, a small point about 5 miles to the SE, the bight which forms the approach to Halmstad, is fronted by an area of shoal ground which extends up to 2 miles offshore. A buoyed channel leads through these shoals to Halmstad.

Anchorage.—Laholms Redd (56˚33'N., 12˚55'E.), which lies in the central part of the E side of the bay provides anchorage in depths from 4.9 to 13.7m.

Photo courtesy of Halmstad Port and Stevedoring Co.

DOCKS IN THE PORT OF HALMSTAD

Halmstad (56˚40'N., 12˚52'E.)

World Port Index No. 24050

Halmstad, which is the capital of Hallands Lan (Province) lies along both banks of the Nissan River in the NE port of Laholmsbukten. Halmstad is an important commercial and industrial city. The port is sheltered. It handles materials such as timber, steel, fertilizers, and grain. Under favorable conditions, vessels with a draft of 9.lm and a length of 212m can be accommodated in the inner harbor. In the outer harbor, vessels with a draft of 11.2m and a length to 234m can be accommodated.

All vessels must report before arrival and before moving within the harbor.

Ice.—Ice seldom obstructs navigation except during the severest winters. When necessary, icebreakers are used to keep the harbor open to shipping.

Tides—Currents.—The maximum differences between mean water level and high and low water levels are 1.2m and 1m, respectively.

The river current is deflected to the W by the breakwater and sets across the harbor entrance.

Depths—Limitations.—In the harbor basin, Oceanhamnen, the alongside berth can accommodated vessels with a length to 235m and a draft of 10.1m.

There are 10 berths at the new harbor basin. Importkajen with a length of 470m and an alongside depth of 7.2m is the largest. Tullkammarkajen has a length of 400m with an alongside depth of 5.5m. Ostrakajen has two berths with a length of 230m and 300m and a depth of 8.2 to 9.lm respectively. Ocean-hamnen has an inner berth 200m and an outer berth 235m with depths of 9.8 to 10m alongside. The port has 4 ro-ro ramps with a depths alongside of 8.4m.

The oil harbor, the outer part of which is dredged to 11m, lies close SE of the river entrance and tankers drawing 9.lm can berth alongside.

Aspect.—An outer breakwater 1.5 miles long, is completed S of the curved breakwater, forming a new outer harbor. The head of this breakwater is painted white and is floodlit.

In the approach to Halmstad, the lighthouse on Tylogrund and the disused lighthouse on Tylo are excellent landmarks. Also useful is the church in Halmstad about 1.75 miles NNE of the breakwater head, the high, lighted radio mast about 9 miles NNE of the breakwater head, and the pointed tower of Snostorp Church about 2 miles E of Halmstad Church.

Pilotage.—At least 5 hours, advance notice of ETA is required. The pilot station and pilot boat are both equipped with VHF frequency radiotelephones and can be contacted on VHF channel 18. The pilot boards in Halmstad Road in position 56˚37'N, 12˚47.5'E.

Pilotage is compulsory between 56˚30'N and 57˚16'N, as follows:

1. All Category 1 vessels.
2. Category 2: Vessels of 80m length, 15m beam, and 5m draft and over.
3. Category 3: Vessels of 90m length, 16m beam, and 5.5m draft and over.

In addition to pilotage into harbors within the Halmstad district, pilots can be provided to take vessels N to Vinga and S to Oresunds Novra LightedBbuoy.

Regulations.—Local harbor regulations are in effect in Halmstad Harbor.

The speed of vessels is limited to 5 knots.

Anchorage is prohibited in the ferry turning basin on the W side of the river about 0.15 mile within the harbor entrance. Anchoring, fishing, and diving are also prohibited in the harbor entrance.

All vessels equipped with VHF radiotelephones are required to call Halmsted Pilots on channels 16 or 13 to inform them prior to arrival, departure, turning, and shifting of berths when within the Halmsted harbor area. This has been instituted by harbor authorities for reasons of traffic safety and in no way

Photo courtesy of Donald and Diana Carter
HALLANDS VADERO LIGHTHOUSE

replaces pre-arrival reporting of ships as prescribed in the harbor regulations.

Anchorage.—There is good holding ground from 9.1 to 12.2m on the roadstead 1 to 2 miles SE of the breakwater.

Directions.—A vessel approaching the harbor from seaward should approach the sea buoy on a course of 037˚, passing close W of it. Continue on this course into the entrance channel being guided by the buoys moored on both sides. The breakwater should be rounded at a distance of about 92m and course then altered to 073˚ on the alignment of the lighted range beacons on the E side of the outer harbor.

At night, a vessel can proceed from the sea buoy through the outer channel being guided by the two parallel pairs of lighted beacons in range 037˚ which define the limits of the channel.

A vessel can approach the harbor from the SSW by steering with Halmstad Church in range 021.5˚ with the breakwater light. When about 1 mile from the breakwater light alter course to the N and enter the buoyed channel being guided by the directions given previously.

Strong currents may be encountered off the harbor entrance.

FORSLOVS CHURCH

GREVIE CHURCH

BARKAKRA CHURCH

JONSTORPS CHURCH

Swedish Coast

6.19 Hallands Vadero (56˚27'N., 12˚34'E.), is a low wooded island, not easily seen against the background of the mainland lying on an area of foul ground about 2.5 miles long in a N and S direction and 1.5 miles wide. A narrow channel with moderate depths lies between the foul ground surrounding the island and the shore bank to the E.

A light marks the NW point of Hallands Vadero. Another mark is the beacon on Vrenen, a small islet off the E extremity of Hallands Vadero.

In this general area, Vingaskar, a small islet is marked by a light.

Anchorage.—Anchorage can be secured between a line forming Vrenen and Vingaskar and the shore fringing the mainland to the E. The best anchorage is in 15.8m, sand and clay, with the beacon on Vrenen bearing 309˚, and Vingarskar Light bearing 204˚. It should be noted, some swell is felt in this anchorage.

Torekovs (56˚26'N., 12˚38'E.) is a fishing village, lying about 4 miles SW of Hoghallaudde. A conspicuous church with a tall, slender spire stands on the E side of this small port.

Fuel, provisions, and water are available.

Skalderviken (56˚20'N., 12˚36'E.) is a large bay entered between **Skaudde** (56˚24'N., 12˚38'E.) and the W extremity of Kullen 8 miles SW. The NE and S sides of the bay are low, but from the W extremity of Kullen a range of hills extends about 4 miles along the SW shore of the bay.

Conspicuous is Ostra Hogkullen 118m high, located about 3 miles ESE of the W extremity of Kullen and is the highest elevation in the area.

Fairly conspicuous landmarks in the vicinity of Skalderviken are the churches at Grevie, about 5.5 miles ESE of Skaudde; Forslovs, about 1.5 miles SE of Grevie; Barkakra, about 3.5 miles S of Forslov; Farhult, almost 6.5 miles SW of Barkakra; and Jonstorps, about 1.5 miles WNW of Farhult.

There are depths from 20 to 25.6m in the entrance of Skalderviken decreasing gradually toward its head. The bottom is rocky near the NE and SW shores but consists of sand and clay in its central part.

Skalderviken is a large yacht harbor at the river entrance approached by a 400m long dredged channel which is protected by two breakwaters. A light is shown from each breakwater head and they are floodlit. The channel has a depth of 2.4m; there are depths about 2 to 2.5m at the berths in the harbor.

Range lights, in line bearing 099˚, are shown from posts erected near the entrance of the harbor.

The best anchorage is found in depths from 11.9 to 13.7m in a position between Jonstorps Church and Vejbyudde, a point on the NE side of the bay about 7 miles SE of Skaudde. A vessel with good ground tackle should be able to ride out a NW gale at this anchorage. Vessels should not anchor with Jonstorps Church bearing less than 210˚.

There are several small fishing harbors in Skalderviken, one of which is Ramsjo with shallow depths. Only small vessels can be accommodated.

Vejbystrand is another small fishing port with shallow depths, located about 0.5 mile N of Vejbyudde.

Dangers.—Grytskaren, a group of awash rocks, lie on a reef which extends nearly 0.75 mile from the NE side of Skalderviken. Three detached rock patches with shallow depths lie SW through NW of Grytskaren. The outermost patch, with a least depth of 4.9m, is marked on its W side by a buoy.

Ronnea (56˚16'N., 12˚50'E.) flows into the head of Skalderviken about 3 miles SE of Vejbyudde. The river is entered between two jetties and can ascend to Angelholm, a town about 2.5 miles above its mouth. Only small craft can be accommodated because of the shallow depths.

Anchorage.—There is anchorage in depths from 6.7 to 9.1m, good holding ground, about 1 mile off the jetties. During strong NW winds, a heavy sea prevails at this anchorage.

On the W side of Skalderviken, there are other small fishing harbors but they will only accommodate small craft.

Table of Contents